WHAT IS CLAIMED:

Claim 1. In a process for improving the characteristics of a pulp useful for making a fluff pulp or a pulp for absorbency intensive applications the improvement comprising:

treating a pulp at a temperature of up to about 60°C, in a suspension, with an alkali solution of a concentration from about 2% to about 25% by weight, for a treatment time sufficient to obtain a pulp of improved absorbency characteristics, and

recovering said thus treated pulp from said suspension suitable for intensive absorbency and fluff pulp use applications.

Claim 2. In a method for improving absorbency of pulps and increasing yields thereof the improvement comprising:

subjecting a pulp fiber suspension at a temperature of less than about 45°C, in a fiber suspension from about 2% up to about 25% consistency, to a caustic solution of a concentration of about 5% to 25% by weight for a time sufficient to improve the absorbency characteristics of a pulp material resulting from such treatment.

Claim 3. In a process for improving pulp properties of pulps useful as fluff pulps the improvement comprising:

subjecting a pulp fiber suspension at a temperature of less than about 45°C, in a fiber suspension from about 2% up to about 25% consistency, to a caustic solution of a concentration of about 5% to 25% by weight for a time sufficient to improve the absorbency characteristics of a pulp material resulting from such treatment.

Claim 4. The process as defined in Claim 3, and wherein the temperature of said pulp fiber suspension is less than about 40°C, the fiber suspension is from about 2%

to 10% consistency, and the caustic solution is at a concentration from about 5% to about 18% by weight.

Claim 5. The process as defined in Claim 3, wherein the concentration of said caustic solution is between 13% and 15% by weight.

Claim 6. The process as defined in Claim 3 wherein the concentration of said caustic solution is between 5% and 10% by weight.

Claim 7. The process as defined in Claim 3, wherein said pulp is from a pulp source starting material of Southern pine, White pine, Western hemlock, a Sitka spruce, Caribbean pine, a Douglas fir or mixtures of same.

Claim 8. The process as defined in Claim 3, wherein said pulp is from a pulp source starting material of eucalyptus, poplar, beech, aspen or bagasse.

Claim 9. The process as defined in Claim 3, wherein the temperature of said caustic treatment is about 30°C and a time of treatment is from about 5 minutes to about one hour.

Claim 10. In a process for improving the fast absorbency characteristics of a pulp useful in absorbency intensive applications the improvement comprising:

treating pulp at a temperature of less than about 40°C in a suspension with a caustic solution of a concentration from about 13% to about 18% by weight, said concentration being dependent on the amount of lignin remaining in the pulp, as measured by the K number and a severity of pulping of said pulp, for a treatment time sufficient to obtain a pulp of improved absorbency, and

recovering the thus treated pulp from said suspension suitable for intensive absorbency and fluff pulp use applications.

Claim 11. The process as defined in Claim 10, wherein said pulp is an unbleached pulp with a K number of 8 or above before the same is treated with caustic solution.

Claim 12. The process as defined in Claim 10, wherein said pulp is partially bleached before treatment of same with said caustic solution.

Claim 13. The process defined in Claim 10, wherein the pulp is a chemical-mechanical pulp or organic solvent obtained pulp.

Claim 14. The process as defined in Claim 12, wherein a bleached pulp is a kraft process pulp, before said pulp is treated with said cold caustic solution.

Claim 15. The process as defined in Claim 12, wherein said bleached pulp is treated with a caustic solution of a concentration inversely proportional to a severity of bleaching to which said pulp had been subjected and wherein said pulp maintains its improved absorbency characteristics upon rewetting.

Claim 16. The process as defined in Claim 10, wherein said absorbency intensive application is for an acquisition layer for a baby diaper.

Claim 17. The process as defined in Claim 10, wherein a pulp source starting material is a pulp derived from a softwood.

Claim 18. The process as defined in Claim 10, wherein said pulp is bleached prior to its treatment with a caustic solution to an ISO brightness percentage of about 25 and higher.

Claim 19. The process as defined in Claim 10, wherein said pulp is treated with a caustic solution in a suspension of about 3% by weight (O.D.) pulp at a temperature

from about 25°C to about 40°C for a period of time sufficient to improve said absorbency for said pulp.

Claim 20. The process as defined in Claim 10, wherein pulps of low K number of at least 12 are treated with a caustic solution of a concentration of up to about 15%.

Claim 21. The process as defined in Claim 20, wherein the concentration of said caustic solution is between 13% and 15% by weight.

Claim 22. The process as defined in Claim 10 wherein said pulp is from a pulp source starting material of Southern pine, White pine, Western hemlock, a Sitka spruce, Caribbean pine, a Douglas fir or mixtures of same.

Claim 23. The process as defined in Claim 10, wherein said pulp is from a pulp source starting material of eucalyptus, poplar, beech, aspen, bagasse or mixtures of same.

Claim 24. The process as defined in Claim 10, wherein the temperature of said caustic treatment is about 30°C and a time of treatment is from about 5 minutes to about one hour.

Claim 25. In a process of constructing an absorbent device having an outer acquisition layer and an inner absorbent core element, the improved process comprising:

pulping a pulp source starting material to a preselected K number of about 8 and above to obtain a pulp with substantially said K number and wherein said pulp is optionally bleached;

treating said pulp at a temperature of less than about 45°C in a suspension with a caustic solution of a concentration from about 5% to about 25% by weight, with a treatment time sufficient to obtain a pulp of improved absorbency values, and recovering thus treated pulp from said suspension suitable for absorbency applications in said device;

sheeting and drying said pulp into a sheet of a basis weight from 200 to 800 grams per meter squared; and

converting said sheet to an outer layer for said diaper on at least one surface of a core element of said device or a core element for said device.

Claim 26. The process as defined in Claim 25, wherein said core element is composed at least in part of improved absorbency pulp obtained as defined in Claim 25 derived from Southern pine pulp.

Claim 27. The process as defined in Claim 25, wherein the device is a baby diaper.

Claim 28. The process as defined in Claim 25, wherein the device is a catamenial device.

Claim 29. The process as defined in Claim 25, wherein the device is an incontinence device.

Claim 30. The process as defined in Claim 25, wherein an absorbent pulp component is of a pulp obtained from hard wood pulp.

Claim 31. The process as defined in Claim 25, wherein the absorbent pulp is of a pulp from Western hemlock.

Claim 32. The process as defined in Claim 25, wherein sheeting and drying said pulp is after flash drying and collecting of said pulp.

Claim 33. An improved pulp for an absorbent device comprised of at least an acquisition layer element wherein said layer is of a pulp as defined in Claim 10.

Claim 34. An improved absorbency material comprised of a cellulosic fibrous material wherein said cellulosic fibrous material has been obtained by pulping a cellulosic source material which has an unbleached pulp K number of at least 12 and wherein said cellulosic fibrous material is a cold caustic solution treated material at a treatment temperature of less than about 40°C, in a suspension of 2% to 15%, with said cold caustic solution being at a concentration of from about 5% to 25% by weight.

Claim 35. The improved absorbency material as defined in Claim 34 wherein the cellulosic fibrous material subsequent to cold caustic treatment has been mechanically treated.

Claim 36. The improved absorbency material as defined in Claim 34 wherein the cellulosic fibrous material subsequent to cold caustic treatment has been beaten.

Claim 37. The improved absorbency material as defined in Claim 34 wherein the unbleached pulp K number for same is at least about 20 and above.

Claim 38. The improved absorbency material as defined in Claim 34 above wherein the same is incorporated into a baby diaper, a catamenial device, an incontinence device, a towel or a tissue in sheet form.

Claim 39. In a process for improving the absorbency of a cellulosic material in a fibrous form of said cellulosic material wherein said material is useful in absorbency applications, the improvement comprising:

treating said cellulosic material at a temperature of less than about 45°C, in suspension, with a caustic solution of a concentration from about 5% to about 10% by

weight, said concentration being dependent on the process employed, wood species used and/or on the amount of lignin remaining in said cellulosic material as measured by a K number measurement, wherein said caustic solution is in contact with said cellulosic material for a treatment time sufficient to obtain a cellulosic material of improved absorbency values, and

recovering thus treated cellulosic material from said suspension suitable for absorbency applications.

Claim 40. The process as defined in Claim 39, wherein said cellulosic material is an unbleached pulp with a K number of at least about 8 or above before treatment of same with said caustic solution.

Claim 41. The process as defined in Claim 39, wherein said cellulosic material is a partially bleached pulp before treatment of same with said caustic solution.

Claim 42. The process as defined in Claim 39, wherein the cellulosic material is a bleached pulp, before treatment of said pulp with said cold caustic solution.

Claim 43. The process as defined in Claim 41, wherein said bleached pulp is treated with a caustic solution of a concentration inversely proportional to a severity of bleaching to which said pulp had been subjected and wherein said pulp maintains its improved absorbency characteristics upon rewetting.

add a 2